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(54) **WEARABLE VOICE-INDUCED VIBRATION OR SILENT GESTURE SENSOR**

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(57) **ABSTRACT**

Disclosed herein are wearable devices, their configurations, and methods of operation that use self-mixing interferometry signals of a self-mixing interferometry sensor to recognize user inputs. The user inputs may include voiced commands or silent gesture commands. The devices may be wearable on the user's head, with the self-mixing interferometry sensor configured to direct a beam of light toward a location on the user's head. Skin deformations or vibrations at the location may be caused by the user's speech or the user's silent gestures and recognized using the self-mixing interferometry signal. The self-mixing interferometry signals may be used for bioauthentication and/or audio conditioning of received sound or voice inputs to a microphone.

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